Clean Air Technologies

Investments in Conservation for
Clean Air and Energy Security
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Some Border Considerations in Energy and Clean Air Policy

- We have an obligation not to shift impacts to Mexico.
- Siting facilities in Mexico to avoid US environmental standards should be prohibited.
- Capacity additions must reflect actual need.
- Technology standards for pollution control required in our country should apply unless more stringent Mexican standards exist.
- Stakeholder participation in the border area should be bi-national for projects affecting both countries.

We have an obligation not to shift impacts

- Demand for and waste of resources on the American side of the border is enormous.
- The financial wherewithal to handle problems we create for Mexico is limited.
- Our refusal to accept the consequences of development could lead to projects that "dodge" US environmental laws and standards (sewage, gravel mining, air and water pollution, pipeline safety, etc.)

Capacity additions must reflect actual need

- We run the risk (with issues like LNG) of supporting developments that impact our neighbors adversely and which are not well justified.
- Long-term LNG contracts needed to justify ports and pipelines may not be rooted in real demand scenarios
- Developing an LNG infrastructure before taking basic demand-side actions locks in potentially dangerous and inefficient decisions and frustrates alternatives.

Criteria for Sensible Energy Investments

- Cleaner
- Cheaper
- Safer
- Faster

These criteria lead toward a strategy of funding investments in Conservation, energy efficiency, and limited conventional sources that replace older, dirtier capacity.

Cleaner

Cleaner investment hierarchy

- Sources that avoid new capacity
- Sources with lowest emissions
- Sources with newest technology and highest efficiency that replace older technologies
- Sources with newest technology and highest efficiency

Sources that avoid new capacity

- Conservation and efficiency investments are the most cost-effective because they require modest capital investment, few O&M costs, and provide clean energy. Pollution creates social costs that must be mitigated and taken into consideration.
- Energy saved is the same as energy produced. That which you don't have to buy to meet existing needs is equivalent in value to energy you must purchase or generate.

Sources with no to low emissions

- Conservation and energy efficiency are considered a source.
- Solar, wind, micro-hydro (where appropriate), geothermal (where appropriate), fuel cells, etc.

  These sources are "distributed" across the landscape and do not use conventional fuels. The tend to be under-utilized due to moderately higher perceived costs, yet hold enormous potential due to technological advances and favorable climate and geography. They provide energy that can best be used near the source yet which can also contribute to the grid.

Sources with newest technology and highest efficiency that replace older technologies

- Older power plants can use up to twice as much natural gas and emit 90% more pollution than newer, more efficient plants.
- Investment strategies that phase out the dirtiest and least efficient plants first will have the highest value in terms of human health benefits, and worker productivity.
- Retiring the most inefficient plants first will help reduce upward pressure on natural gas prices and tightening of supply, keeping rates low.

Sources with newest technology and highest efficiency

- Sources with the most efficient technology and lowest possible emissions should be added, but only as demand requires, and after the preceding options are fully explored.
- Environmental Justice and environmental health parameters must be considered.
- Adding too many of these sources too soon will discourage investment in cleaner technologies.
- Guaranteed contracts for LNG could frustrate RPS goals.

Cheaper

- Cheaper investment technologies are those with low to no capital investment needs, low O&M Costs, do not require expensive security measures, and no unforeseen or "hidden" costs, such as radioactive waste disposal, very high O&M costs, or elaborate decommissioning.
- Conservation, efficiency and renewable energy resources are all examples of such technologies.

Energy Savings Are Equivalent to Energy Production

- Despite dire predictions of hundreds of hours of blackouts, California did not experience a single blackout during the summer of 2001. Why?
- Californians saved enough energy to replace the capacity of more than six 500 megawatt power plants.

Reduction in 2001 Monthly Peak Demand for California

Percent Reduction-

January - 6.2%

February - 8.0%

March - 9.2%

April - 9.0%

May - 10.4%

June - 14.1%

July - 10.7%

August - 8.9%

September - 8.0%

Source: California Energy Commission

Faster

- Conservation has fastest turn-around. Involves both behavioral actions and technological fixes.
- Efficiency programs can have short to moderate timelines (appliances, HVAC, cooling, etc.).
- Renewables have short time horizons for implementation and few environmental barriers.
- Nuclear is slowest of all.

Safer

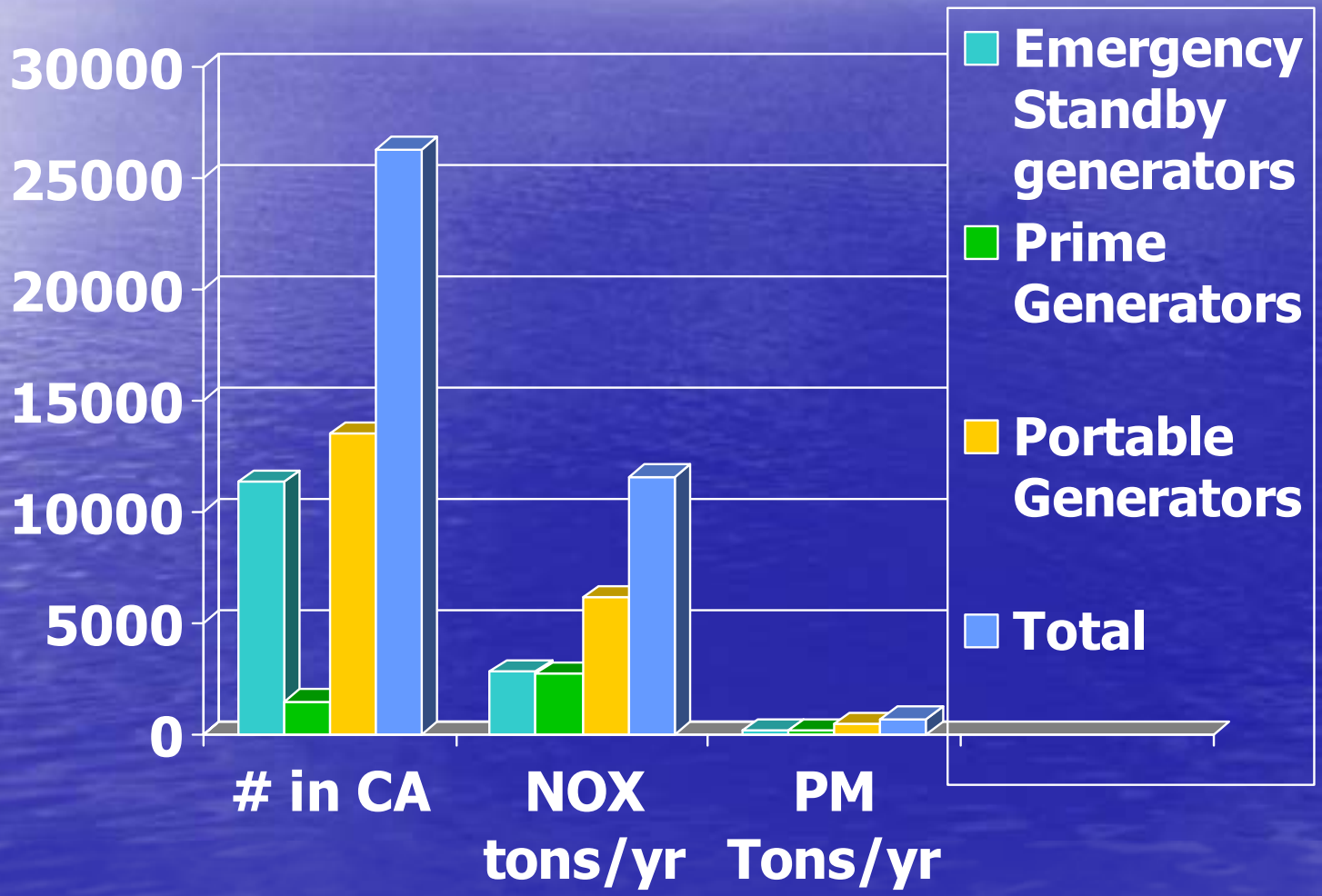
- **Safer technologies are those which produce little to no pollution, present no inherent safety risks to nearby populations, and do not present attractive targets to potential terrorists.**
- **Conventional energy technologies such as oil, coal, natural gas and nuclear power all have problems that make them less safe than conservation, efficiency and renewable energy sources. Particulate, VOC, and gaseous emissions from fossil plants, radiation emissions, transportation and disposal of radioactive waste from nuclear plants, and the inherent vulnerability of fuels pipelines and transmission systems underscore the drawbacks of these technologies v. "soft path" energy technologies.**

The Alaska Pipeline was shut down in mid October after it was pierced by a single bullet fired by a drunk. 280,000 gallons of oil were spilled. A winter closure of the pipeline could create the world's largest chap stick.

Avoiding Emissions

- Technologies that avoid either primary emissions from power plants or dangerous diesel or less efficient gas emissions from fossil-fueled back-up substantially contribute to community health and safety.
- Conservation, efficiency and renewable distributed generation fit this criterion.
- Dirty Diesel generators dramatically increase lifetime risk of cancer for nearby communities.

Diesel Generators Used as D-G in California



Air Pollution and Young People

- Children are particularly vulnerable to smog and soot: Soot is caused by burning oil, coal, wood and gasoline and creates small particles that become embedded in the lungs. Researchers at Brigham Young University found that when soot level rose, hospital admissions for children with respiratory illness tripled. Breathing smog, which is formed when sunlight hits chemicals emitted by burning oil, coal and gasoline, makes children's lungs swell and redden and causes coughing and shortness of breath. Continued exposure can scar and severely damage children's lungs.

Conservation, Efficiency and Renewables: Safety First

- They are the cleanest, cheapest, fastest and safest ways to produce energy.
- Few vulnerabilities to terror.
- No to low emissions.
- Matches need to nearby supply.
- Provide power when most needed guarding against supply interruptions.
- Not susceptible to foreign political manipulation.

Good Distributed Generation Technologies

- Photovoltaic electric
- Wind
- Fuel Cells
- Combined Heat and Power and Cogeneration – using process heat and waste heat for several purposes.

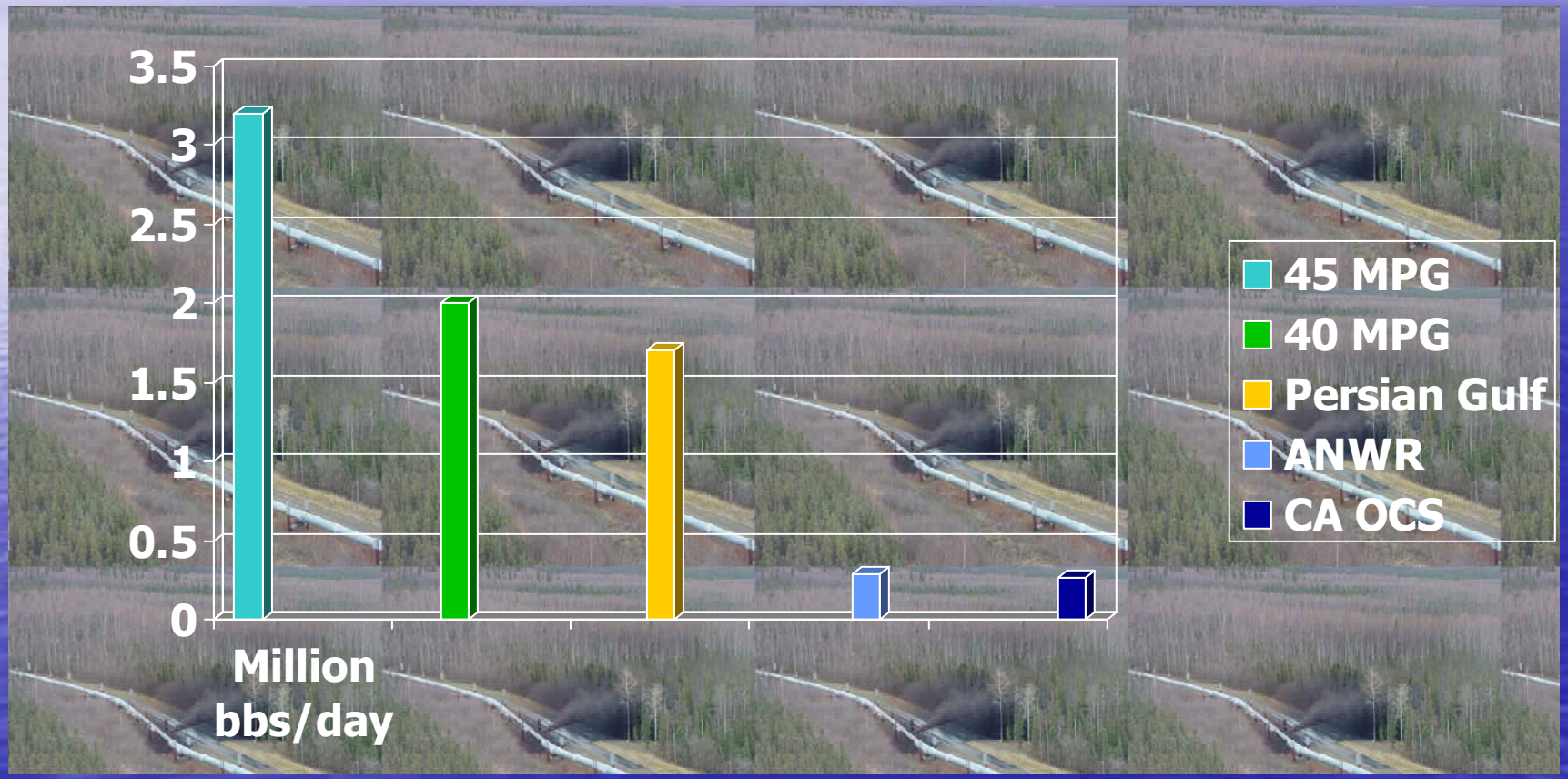
Top Five Global Warming Emitters

- United States
- China
- Russia
- Japan
- United States Automobile Emissions

Increased Auto Efficiency Saves Consumers Money

- **A fleet that relies on continuously evolving conventional technologies could reach an average of more than 40 miles per gallon, nearly a 75 percent increase compared with today's fleet. Many of these gains could be made with technologies that are already in consumers' hands. These improvements would lead to fuel cost savings of $3,000 to more than $5,000 over the lifetime of a vehicle. These savings would more than make up for the cost of the fuel economy improvements. Under such a scenario, the typical family car could reach over 45 mpg, while the cost of filling up an SUV could be cut in half with a fuel economy of 40 mpg. *Drilling in Detroit* (UCS), 2001**

Increased CAFE v. Persian Gulf and other supply options



Common Sense Energy Policy and Investment Strategy

- Choose those sources that are cheapest, cleanest fastest and safest first.
- Utilize a hierarchy to identify investments by setting criteria, including human health and ancillary social costs as factors.
- Encourage clean D-G as an integral part of this strategy.
- Prioritize funding for these sources.
- Tax polluting energy sources to defray cleanup and health costs.
- Retain and expand conservation and renewable energy incentive programs.
- Streamline permitting and grid interconnection for clean D-G.
- Establish a renewable portfolio standard to insure progress on clean D-G and to help effect economies of scale in manufacturing.
- Utilize state and federal purchase power to jumpstart industries and effect economies of scale.
- Mandate govt. building retrofits.
- Increase automobile fuel efficiency standards to 45 mpg.
- Close the light truck loophole for CAFÉ standards.

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